



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/783,896	02/15/2001	Mark I. Greene	PENN-0743	3799
26259	7590	02/12/2004	EXAMINER	
LICATLA & TYRRELL P.C. 66 E. MAIN STREET MARLTON, NJ 08053			TUNG, JOYCE	
			ART UNIT	PAPER NUMBER
			1637	
DATE MAILED: 02/12/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/783,896	GREENE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Joyce Tung	1637	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,11 and 14-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,11,14,15,18-21 and 24-27 is/are rejected.
- 7) ☒ Claim(s) 16,17,22 and 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/12/2003</u> . | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Following the entry of the amendment filed 10/30/2003, the claims 6-8 and 14-19 are pending.

1. Claims 1, 11 and 13-14 remain provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being respectively unpatentable over claim 5-11 of copending Application No. 09/624,946 and over claims 1 of copending Application No. 09/977,716 since there is no terminal disclaimer filed.

2. Claim 1 remains rejected under 35 U.S.C. 103(a) as being unpatentable over Eberwine et al. (5,922,553, issued 7/13/1999) in view of Sano et al. (5,665,539, issued 9/9/1997).

The response argues that Eberwine et al. do not teach quantification of epitopes using fluorescence and Sano et al. do not teach quantification method. However, in claim 1 there is no a quantification step. The limitation "measuring fluorescence..." can be used for quantification or detection. Sano et al. do teach that fluorescence dyes such as ethidium bromide can be used to stain DNA (See column 7, lines 27-32). Therefore, the rejection is maintained.

Claims 15, and 18-20 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Eberwine et al. (5,922,553, issued 7/13/1999) in view of Sano et al. (5,665,539, issued 9/9/1997).

Eberwine et al. disclose the solid support, which can be beads and microtiter plates (See column 4, lines 18-21). T7 RNA polymerase was applied and double stranded cDNA was synthesized (See column 4, lines 36-56). Thus the teachings also read on the limitations of claims 15 and 18-20.

3. Claims 11 and 14 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Eberwine et al. (5,922,553, issued 7/13/1999) in view of Zeytinoglu et al. (5,874,226, issued 2/23/1999).

The response argues that Eberwine et al. do not teach the detection of epitopes using RNA amplification in combination with reverse transcriptase or replicase reaction and fluorescence and Zeytingoglu et al. disclose the immunodetection methods including “two steps, three steps, PAP and APAAP” without further elaboration of what is meant by the terms.

As discussed above, the teachings of Eberwine et al. read on the steps (a) and (b) of claims 11 and 14. Zeytingoglu et al. disclose that other amplification is also applicable including two steps (See column 5, lines 14-16) and the PCR amplification method is especially advantageous where the amount of antigen to be detected is very small (See column 5, lines 47-49). The teachings of Zeytingoglu et al. are interpreted, as that additional polymerase chain reaction would have been included for detecting very small amount of antigen. Moreover, using reverse transcriptase or replicase in the additional amplification reaction to obtain more cDNA was well known in the art at the time of the instant invention. By additional amplification steps, more cDNA is obtained, it makes the method more sensitive. Therefore, based upon the analysis above, the rejection is maintained.

Claims 24-26 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Eberwine et al. (5,922,553, issued 7/13/1999) in view of Zeytinoglu et al. (5874226, issued 2/23/1999).

Eberwine et al. disclose that cDNA is covalently coupled to a second antibody, T7 RNA polymerase is applied and double stranded cDNA is synthesized (See column 4, lines 36-56). Although, Eberwine et al. do not indicate whether the covalently coupled antibody is monoclonal antibody, based upon the teachings of Eberwine, the method of coupling antibody can be applied to any antibodies. Thus the teachings also read on the limitations of claims 24-26.

*Allowable Subject Matter*

4. Claims 16-17 and 22-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

NEW GROUNDS OF REJECTIONS

*Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 21 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eberwine et al. (5,922,553, issued 7/13/1999) as respectively applied to claims 1 and 11 above, and further in view of Shannon (6,132,997, issued Oct. 17, 2000).

Art Unit: 1637

The teachings of Eberwine et al. are set forth in section 6 of the Office action mailed 5/30/2003. Eberwine et al. do not disclose using cyanine dye to contact the amplified oligonucleotide in which the dye binds to RNA and stains the amplified oligonucleotide.

Shannon discloses a method of linear amplification of mRNA (See column 2, lines 65 to column 3, lines 1-7). The RNA product is stained with cyanine dyes based upon the particular intended use of the RNA (See column 9, lines 6-17).

One of ordinary skill in the art at the time of the instant invention would have been motivated to apply the cyanine dye to the method of Eberwine to stain the RNA for quantifying molecules expressing a selected epitope in a sample. Shannon discloses that based upon the particular intended use of the RNA, for example, detection or isolation DNA (See column 8, lines 57-61), the RNA is labeled with cyanine dye. Thus, it would have been prima facie obvious to apply fluorescence dye, cyanine dye to the method of Eberwine et al. for quantifying molecules expressing a selected epitope in a sample.

#### Summary

7. No claims are allowable.

#### *Conclusion*

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 1637

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiries concerning this communication or earlier communications from the examiner should be directed to Joyce Tung whose telephone number is (703) 305-7112. The examiner can normally be reached on Monday-Friday from 8:00 AM-4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached at (703) 308-1119 on Monday-Friday from 10:00 AM-6:00 PM.

Any inquiries of a general nature or relating to the status of this application should be directed to the Chemical/Matrix receptionist whose telephone number is (703) 308-0196.

10. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Art Unit 1637 via the PTO Fax Center located in Crystal Mall 1 using (703) 305-3014 or 308-4242. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989).

Joyce Tung J.T.  
February 2, 2004

  
**ETHAN WHISENANT**  
**PRIMARY EXAMINER**